

# ARCHITECTURE

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No. 5

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## SCHOOL OF ARCHITECTURE COLUMBIA UNIVERSITY

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## PROFESSIONAL COMMENT.

IF the friends of registration, or licensing, whichever one wishes to call it, are in earnest, now is the time to "get busy." For the first time in the history of the agitation for this reform the architectural societies seem to be unanimous in their desire for the passage of such a law. The bill introduced late in the session of last year's legislature was backed by the Architectural League of New York and the local chapter. There has never been any question as to the attitude of the up-State chapters. The opposition always came from New York City. Having all gotten together, what are we going to do about it? The Legislature meets on the first day of January. A large number of bills always fail of final passage through the tardiness of their friends in securing their introduction in time for proper consideration. Two of the previous attempts to secure the passage of a licensing act have failed mainly for these reasons. Last year's bill, a copy of which we have before us, and which was introduced by Assemblyman Frederic D. Wells, at the request of certain members of the New York Chapter, bears the date of March 9. If anything is to be done this year the bill should be in course of preparation now and steps should be taken immediately to see that it is introduced in the opening days of January. If this is not done, the licensing act will again be found among the thirty-day bills at the close of the session and for the fourth time it will be lost in the mass of legislation with which the Governor is overwhelmed after the adjournment at Albany.

IT is stated in the Dutch papers that M. Cordonnier, who received the first premium in the competition for the Peace Palace at the Hague, has been definitely appointed architect for the carrying out of the building, which is to be built nearly according to his original design. From a competition point of view it is, of course, right that the architect who gained the first premium should be appointed; but on architectural grounds we must regret the selection, for a building which if really carried out will attract so much attention, of a design of so flaunting and *rococo* a character; the last kind of thing that one would expect or wish to see as the architectural expression of a cosmopolitan Peace Palace.

THE schedule of architectural exhibitions starts with that of the Boston Architectural Club, which opened at the Boston Public Library on November 5, and will last until November 24. The T Square Club of Philadelphia follows on December 1, at the Pennsylvania Academy of Fine Arts, and this exhibition closes with the year. Although, as usual, architectural design will dominate at the latter exhibition, the T Square Club has secured the co-operation of the National Society of Mural Painters, the National Sculpture Society and the American Society of Landscape Architects and the departments of the exhibition in which these societies are particularly interested will be conducted with their co-operation; as a representative of each of these organizations has a place upon the Exhibition Committee. Special attention is devoted to the Department of Arts and Crafts at both of these exhibitions; a tendency which is particularly noticeable in view of the fact that during the past few years this section has been reduced to the minimum if not positively discouraged in the exhibitions of the Architectural League of New York.





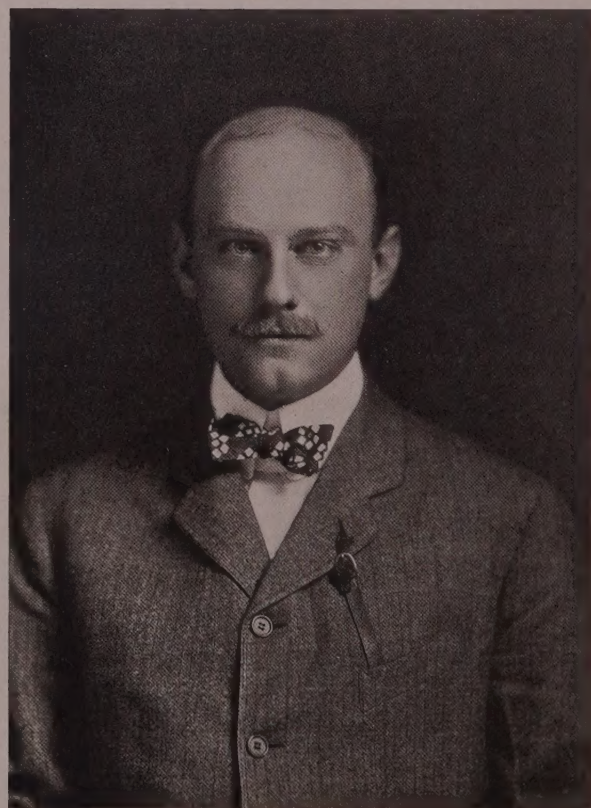
Architects of To-Day.

MR. J. M. A. DARRACH, NEW YORK.

THE myth of the \$2,500 cottage dies hard. In a discussion now taking place in the *New York Sun* as to the proportion of a man's income that should be properly devoted to rent, the lay public seems to have formed the final solution for a man with a small income in the sage advice volunteered by one of the correspondents to "Borrow \$3,000 at 5 per cent. and build a \$2,500 cottage on a \$500 lot." We do not pretend to be experts on the value of the lot, but in this year of grace in the neighborhood of New York we do know something about the \$2,500 cottage, and we know it is a fairy tale, particularly for the builder of a single house. The speculative building in rows and building a mechanic's cottage of the simplest type may come within some hundred dollars of that figure, but to the man with the small income who wants to build a home, the \$2,500 cottage is chimera. \$3,500 is the lowest possible figure at which it can be done and even then a man must have special facilities for getting the work cheaply done under prevailing prices in and around the metropolis.

THE October number of *Charities*, the principal organ of philanthropy in the United States, contained articles by three architects: Mr. Grosevenor Atterbury on "The Phipps Model Tenements;" Mr. Ernest Flagg on "The Best Methods of Tenement Construction;" and Mr. William C. Haslett who writes under the caption "Of the Breed of Buddensiek." In Mr. Haslett's article, he attempted to explain why the speculative builder is anathema to the worker for tenement house reform but in doing so he indicted the wrong man. The architect who knows the system under which the speculative builder works and who

frequently is employed by the real principal in the transaction knows that the speculator is only a cog in the wheel of a system. Under this system the speculator often loses (not much it is true) but all he has. The men who control the money market and who make the building loans never lose. In actual operation the system works something like this: The loan man owns a lot worth \$20,000. He sells to a speculative builder with \$5,000 cash, and who wants a building loan. The loan man knows he takes a certain risk in selling with so large a mortgage, so to make himself perfectly secure he sells the lot to the speculator for \$25,000, or \$5,000 of inflated value which custom gives him the right to put on for his risk. If all goes well and the operation is successful and a prompt sale made, both the speculator and the loan man make money. If things go wrong the loan man forecloses. His first mortgage wipes out all other claims to the extent of the original inflated value and he exchanges this inflated value for \$5,000 worth of real value. He then completes the operation and begins again with \$5,000 on the right side of his ledger at the start. Furthermore when his buildings are completed the speculator finds that the loaning companies are willing to give him a loan with little regard for the methods of construction. The man who has built a good house finds that his competitor who has followed in the footsteps of Buddensiek has just as large a loan, and as the size of the loan is the main factor in his attempt to secure a big selling price for his holding, it does not take him long to find out that as a speculative investment (from his standpoint) good houses do not pay. The people who control the loan market could absolutely stamp out the "Breed of Buddensiek" if they so desired. All they would



Architects of To-Day.

MR. W. F. BEEKMAN, NEW YORK.



have to do would be to employ proper architects to inspect the work in their behalf, and to give the speculators to understand that the size of their permanent loan would be governed by these reports. Under this system the Budden-siek would go out of business. Mr. Haslett's indictment is very much like the arrest of the barkeeper for a violation of the excise law while the proprietor goes free.

A RECENT work by Mr. Sidney Perks, R. I. B. A. on "Residential Flats of all Classes Including Artisan Dwellings," the author not only presents a comprehensive history of apartment building but also provides a more complete review than has been heretofore presented of what the modern architect has done towards the solution of the apartment problem. The author points out that it is a mistake to suppose that the flat or apartment is a product of modern civilization. There is excellent evidence that in the year 45 B. C., "It happened that the families not able to build independently joined in groups of two, three or more and raised a house in common, one family occupying the first floor, others the floors above." Even Augustus Cæsar was confronted by the tenement problem and to meet the situation he limited tenements to sixty-eight Roman feet while the Emperor Trajan allowed the front portion to be only fifty-eight feet. Even the two or three family house now so popular with the speculator in suburban districts, is no new thing, as in the eighteenth century the "maisonette" was a well known form of construction. In the "maisonette," two families would occupy the basement, ground floor and first floor, one on each side of the building, and frequently a third family would occupy the upper floors, the house being so arranged that each family had a separate entrance.

#### WINTER STUDIES.

FOLLOWING close upon the summer holidays come the announcements in all directions of the opening of technical schools and evening classes for the winter session, and it is fully time for the younger students to make up their minds what they shall do during the long winter evenings to improve their knowledge. In these days of stress it is an acknowledged necessity that a young man should not content himself with what he is able to learn during office hours. If he means to take a place in after-life amongst his *confreres* that will enable him to earn a living and make a reputation, he must make the best of his early life, and thoroughly master the principles of his craft.

Twenty years ago the difficulty was a different one; then it was not so easy to obtain good instruction at all. Now it is perhaps more difficult to select what is best suited to the individual case, and to avoid over-doing it and injuring the health. Many an energetic young fellow will commence the winter by joining so many classes that he will be unable to stand the strain, and end by having to abandon several of them, if not all. The conservation of strength is essential, and it may generally be laid down that no lad who is engaged in an office all the day should work for more than two hours for five nights in the week, reserving Saturday afternoon and evening as well as all Sunday for recreation and amusement. Out of these ten hours which are to be devoted to study only four can properly be given to class attendance, as the rest will be needed for reading and home work if full advantage is to be taken of the class, and the problem is therefore narrowed down to considering

how best to use these four hours. The probability is that this means limiting the studies to four subjects, though possibly more can be done if certain subjects are taken between October and December and replaced by others after Christmas. In the majority of cases it is best to take up few subjects, and to master them thoroughly, rather than to try to cover too much ground. The younger architectural student needs to remember that his profession has in the matter of study a dual aspect. He must be a good draughtsman and a good constructionalist. He therefore does well to divide his time about equally between subjects which involve drawing and those which involve knowledge of constructional problems. An architect must draw well, and he must also construct well, and good drawing is not always to be gained by mere office practice upon tracings. Freedom of hand and bold decision are essential. Consequently freehand drawing must be practiced from the very earliest time, starting with simple studies, but always from the solid in preference to merely copying, and to a large scale, and going on gradually until the human figure is attempted from life. The result of such study, carried on systematically winter after winter, is a grasp of form and power of wielding the pencil which is not to be obtained in any other way. If artistic drawing is cultivated in this way, mechanical drawing must not be neglected, and at the outset should be confined to simple geometrical problems, there being few better things to do than to enter good classes in practical plane and solid geometry.

Whatever work be started upon ought to be carried through from beginning to end, without pause or break. Too much should not be undertaken, but what is attempted should be done thoroughly well. In very many instances as we know from the experience of former years, the too enthusiastic starter gives up when half-way through. It should always be remembered that it is the steady persevering man who succeeds the best.

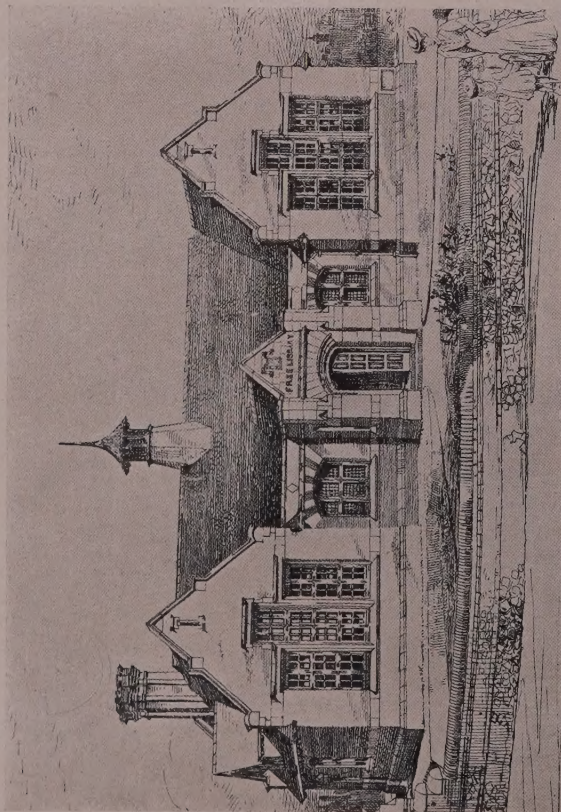
#### CLERKS OF WORKS AND THEIR DUTIES.

THERE are few more difficult positions to fill in connection with buildings than that of a Clerk of Works, yet there are none about which so little information is to be obtained, either in books or in articles contributed to our own columns or to those of our contemporaries. To a certain extent the position is more important even than that of the architect, as it is the Clerk of Works who is directly responsible for good materials and good workmanship. He is, in fact, the direct descendant of the architect, or chief builder, of former days, who doubtless designed and controlled a building himself from commencement to completion, scarcely ever leaving it, but following it day by day and seeing that its every detail was to his perfect satisfaction. At the present time he occupies a midway position between architect, employer, and contractor, and, as buildings become more complex, so do his duties become more difficult of performance.

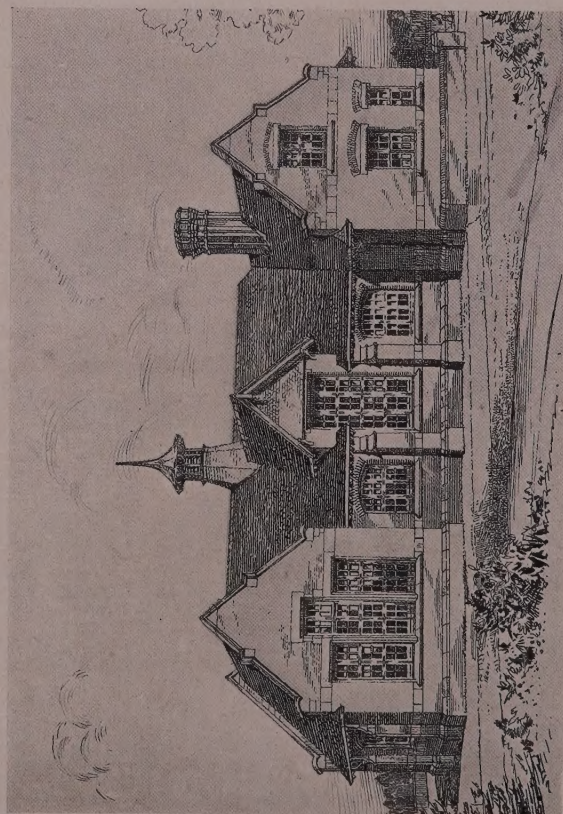
Generally selected by the architect, and responsible immediately to him, he is paid by the building owner, sometimes directly, sometimes through the architect. In the case of municipal work, or that undertaken by any incorporated body, it is usually the building owner who pays direct; but the private individual rarely cares to be troubled with small weekly disbursements. With such a building owner, the architect hands the Clerk of Works his

(Continued page 191)



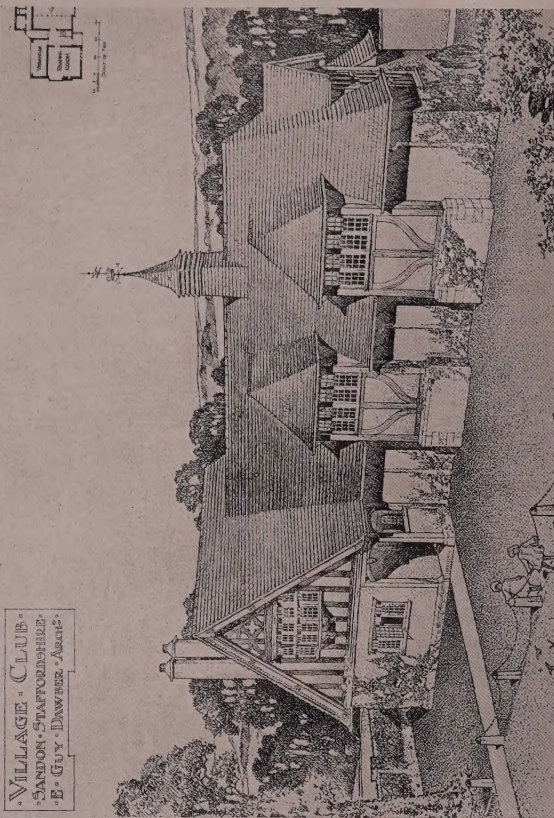


DESIGN FOR A LIBRARY, LITTLEHAMPTON. FRONT VIEW. H. Howard, Arch.



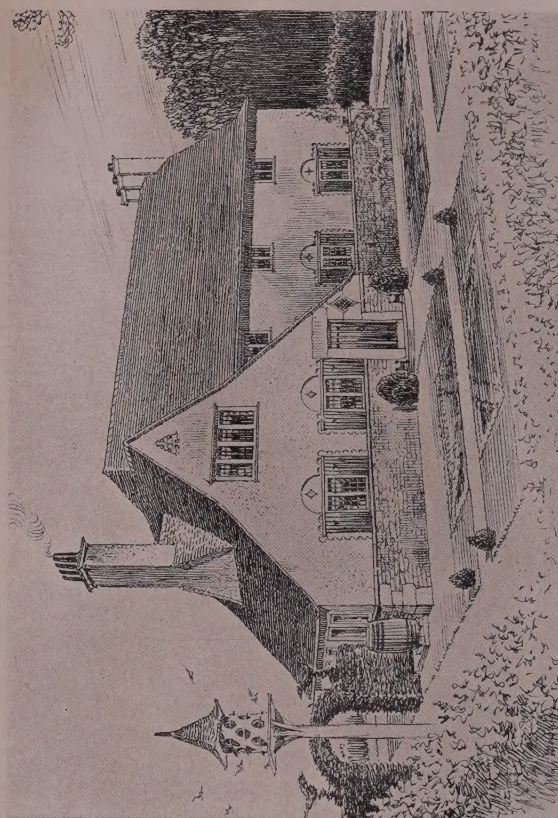
DESIGN FOR A LIBRARY, LITTLEHAMPTON. REAR VIEW. H. Howard, Arch.

VILLAGE CLUB.  
SANDON, STAFFORDSHIRE.  
E. GUY DAWBER, ARCHT.



DESIGN FOR A VILLAGE CLUB, STAFFORDSHIRE.

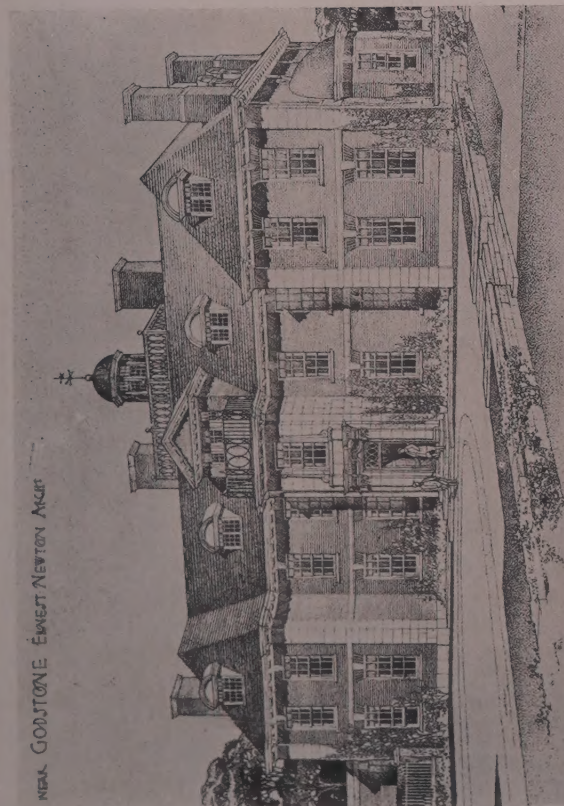
E. Guy Dawber, Arch.



DESIGN FOR A COUNTRY HOUSE.

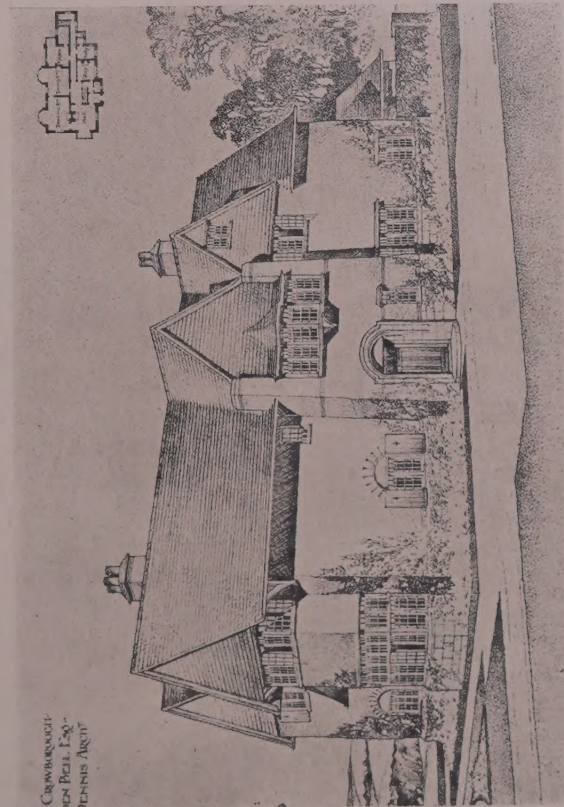
H. D. Bryan, Arch.





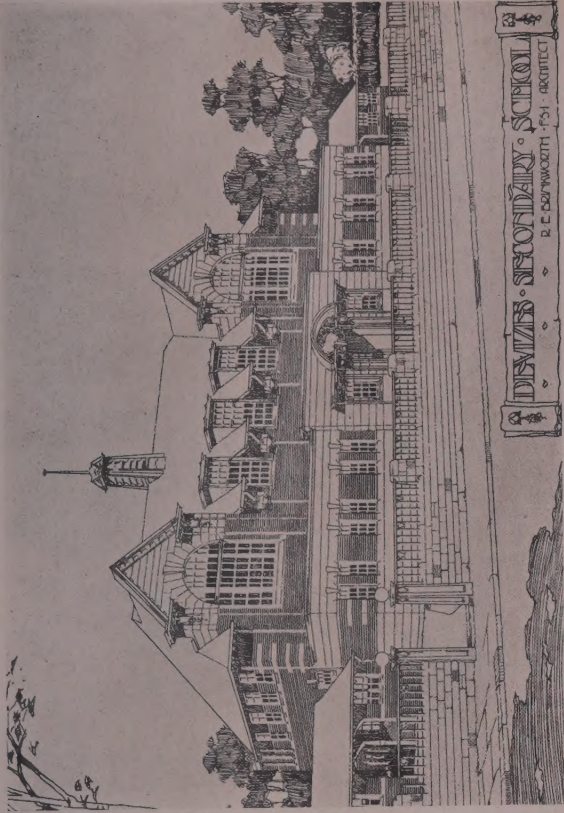
NEAL GODSTONE ERNEST NEWTON ARCHT.

DESIGN FOR A COUNTRY HOUSE, NEAR GODSTONE. Ernest Newton, Archt.



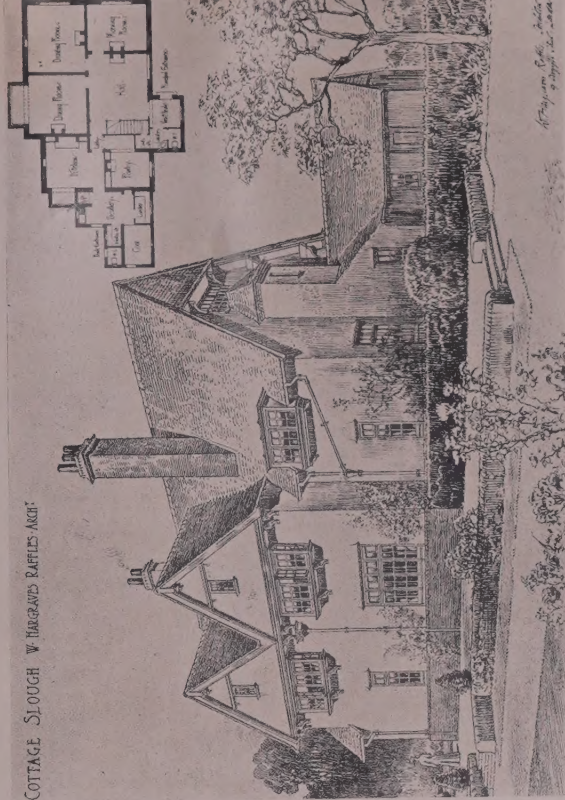
CROWBOROUGH  
NEAL GODSTONE  
ERNEST NEWTON ARCHT.

DESIGN FOR A COUNTRY HOUSE, CROWBOROUGH. Langdon Dennis, Archt.



DESIGNS FOR A SCHOOL.  
R. E. BINKWORTH ARCHT.

DESIGN FOR A SCHOOL.

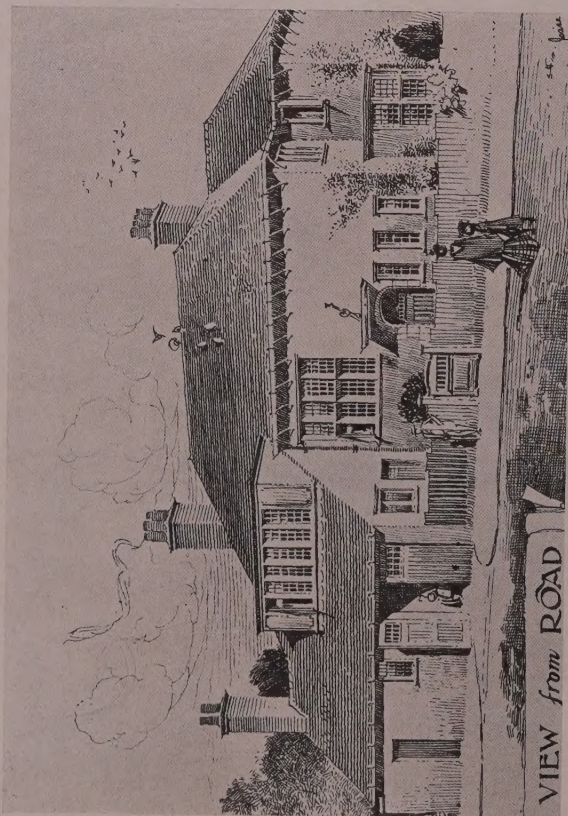


COTTAGE SLOUGH W. HARGREAVE RAFFLES ARCHT.

W. H. RAFFLES ARCHT.

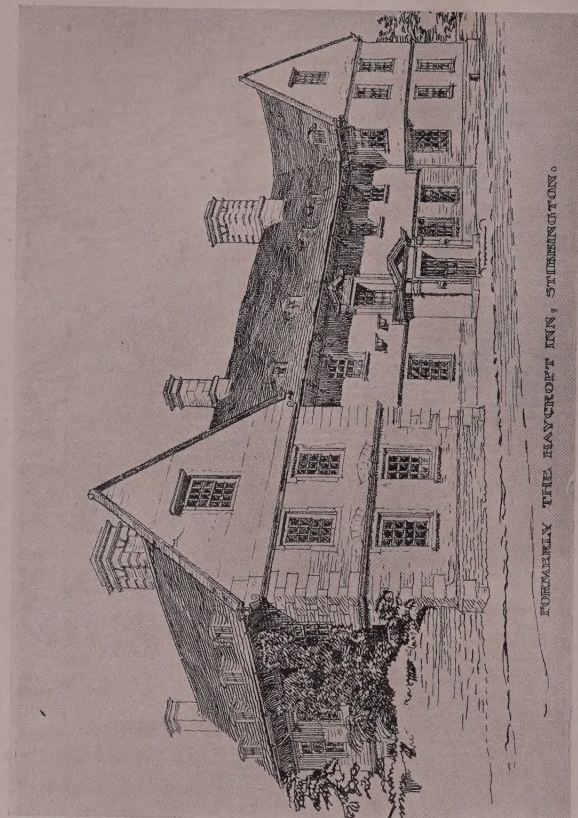
DESIGN FOR A COUNTRY HOUSE.





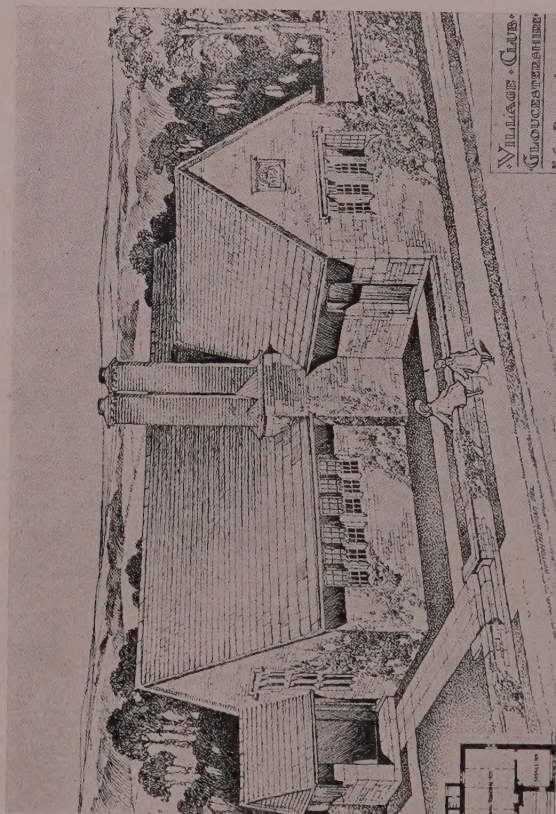
DESIGN FOR A COUNTRY HOUSE.

Jesse Horsfall, Arch.



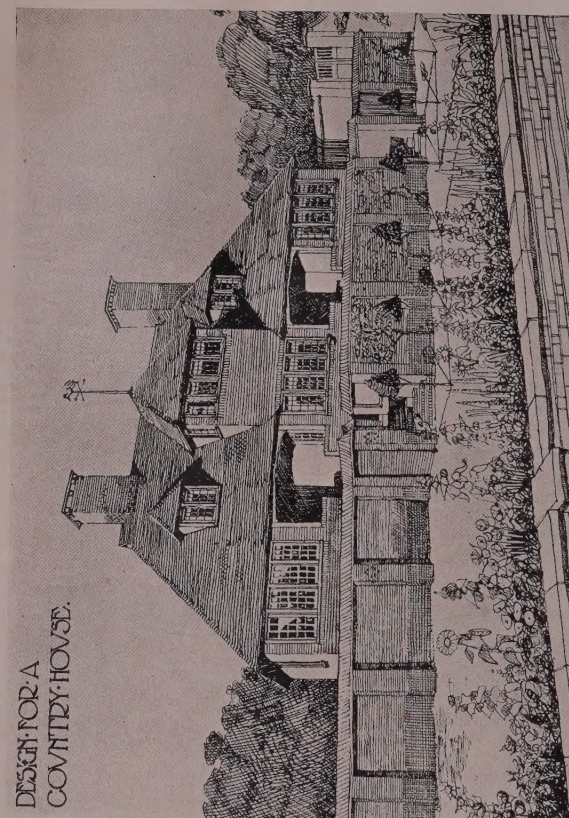
DESIGN FOR A COUNTRY INN, STIBBINGTON.

J. C. Smith, Arch.



DESIGN FOR A VILLAGE CLUB, GLOUCESTERSHIRE.

E. Guy Dawber, Arch.



DESIGN FOR A COUNTRY HOUSE.

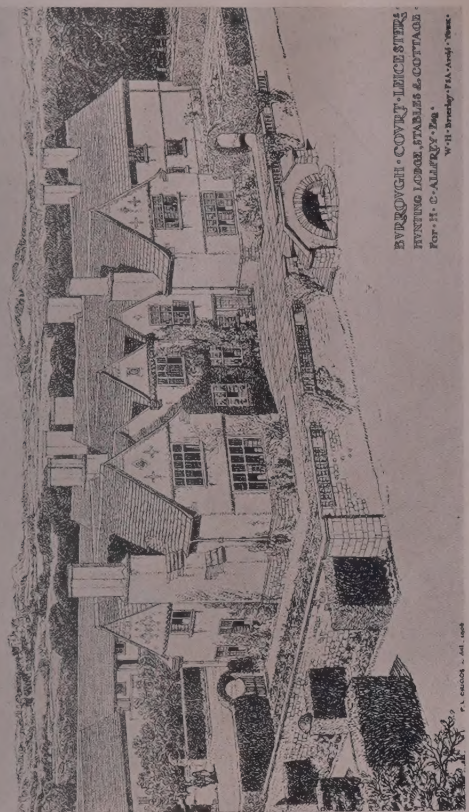
J. K. Ground, Arch.





DESIGN FOR A COUNTRY HOUSE.

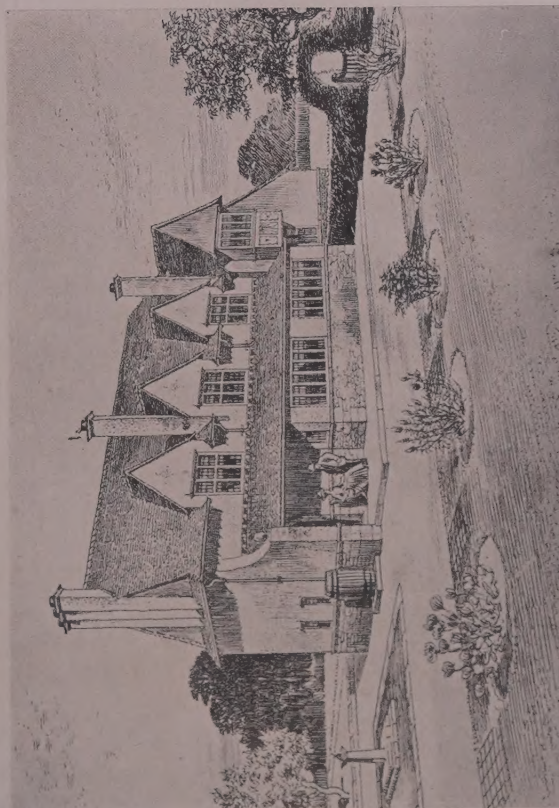
O. P. Parsons, Arch.



DESIGN FOR A HUNTING LODGE.

W. H. Bierley, Arch.

BYRONCH-COVELL-LEICESTER  
HUNTING LODGE, STABLES & COTTAGE  
FOR H. G. ALLEY, Esq.  
W. H. Bierley, F.R.S., Archt. & Decor.



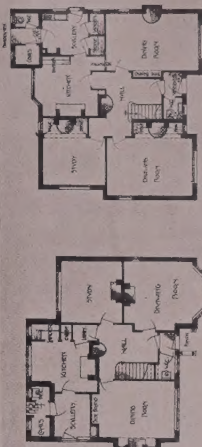
DESIGN FOR A COUNTRY HOUSE.

H. D. Bryan, Arch.



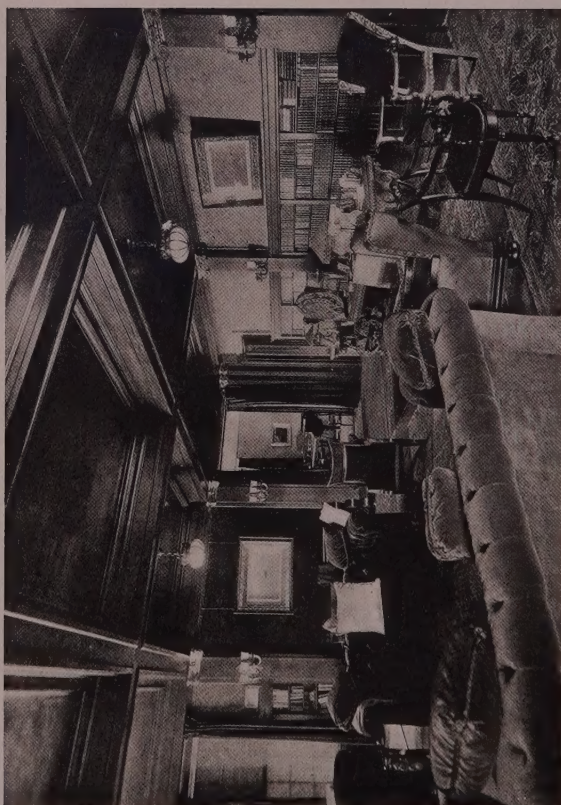
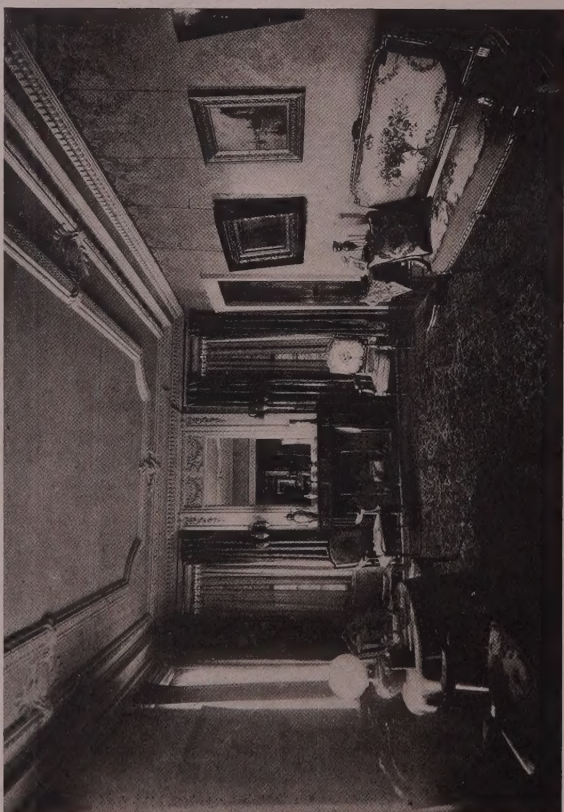
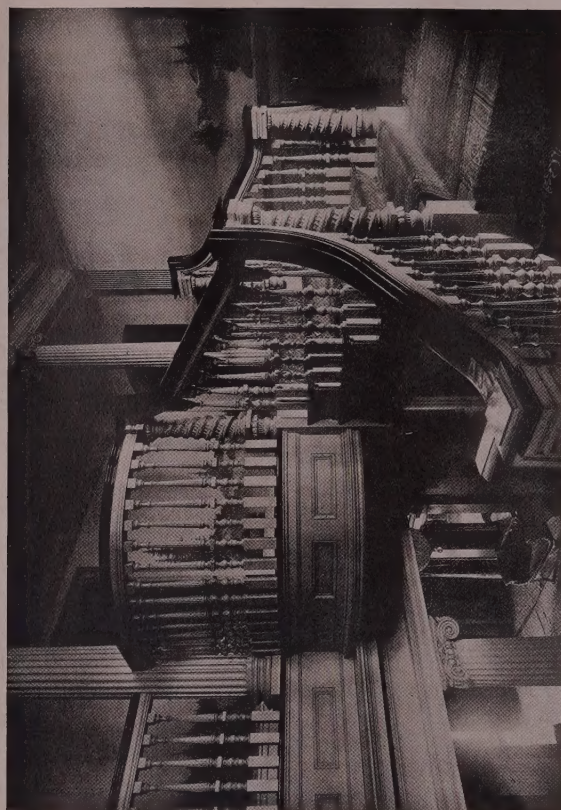
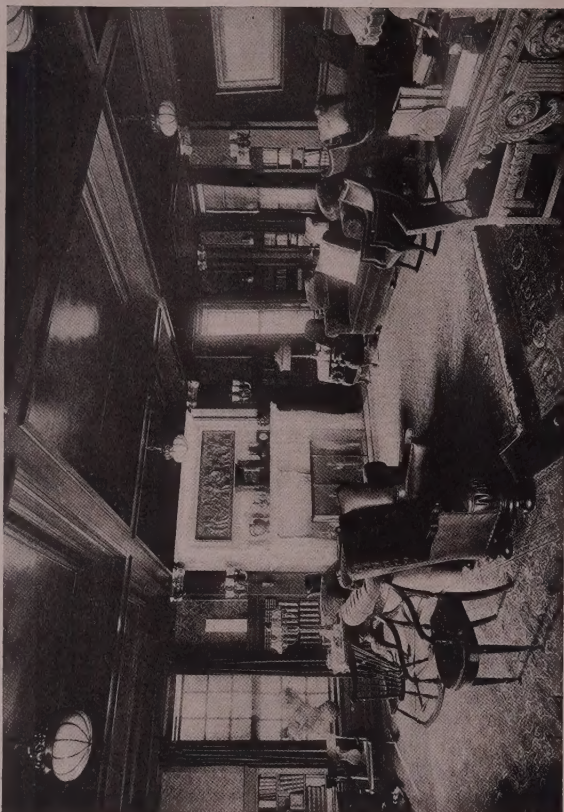
DESIGN FOR GROUP OF HOUSES.

Clayton & Black, Arch's.



THREE HOUSES  
MORVAND, HEATH, & CLUGEN  
CLAYTON & BLACK, ARCHT.

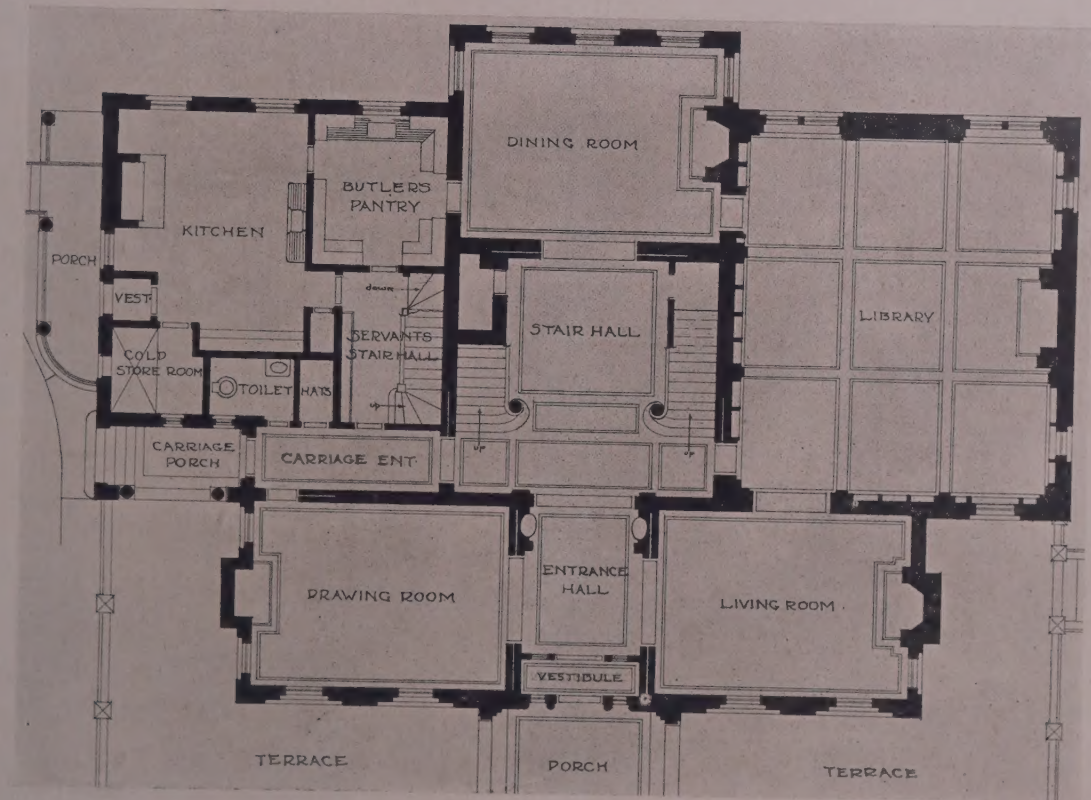
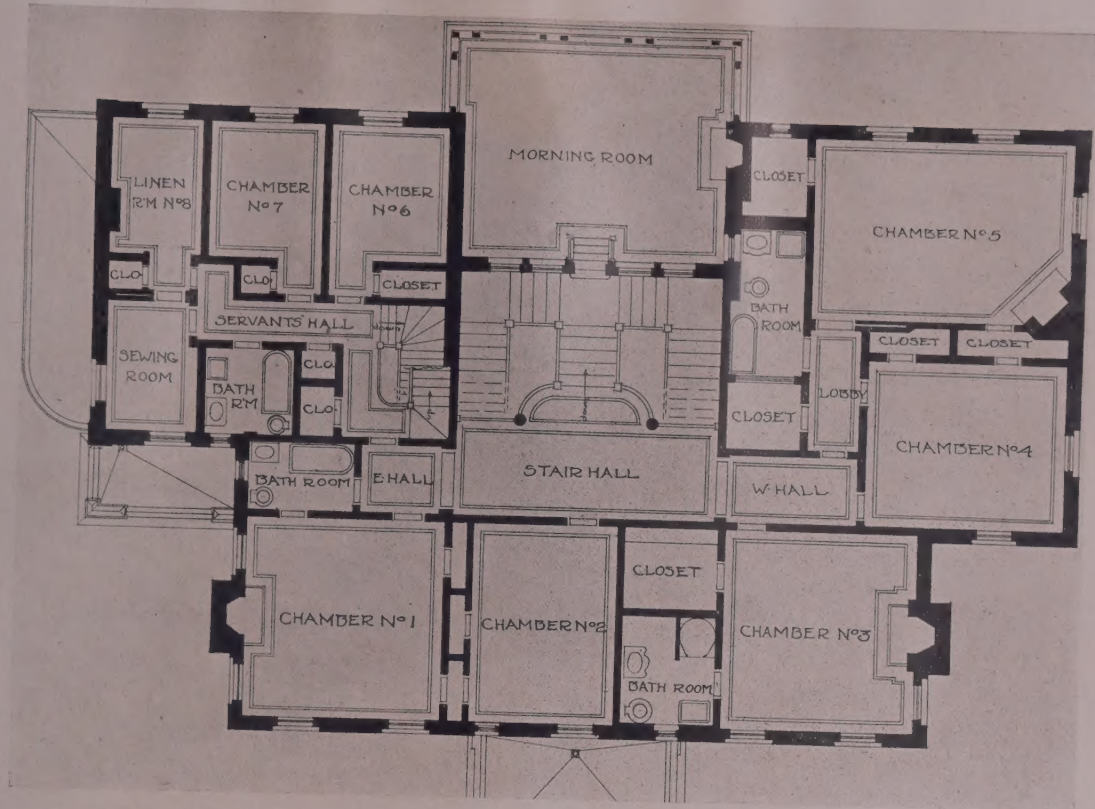




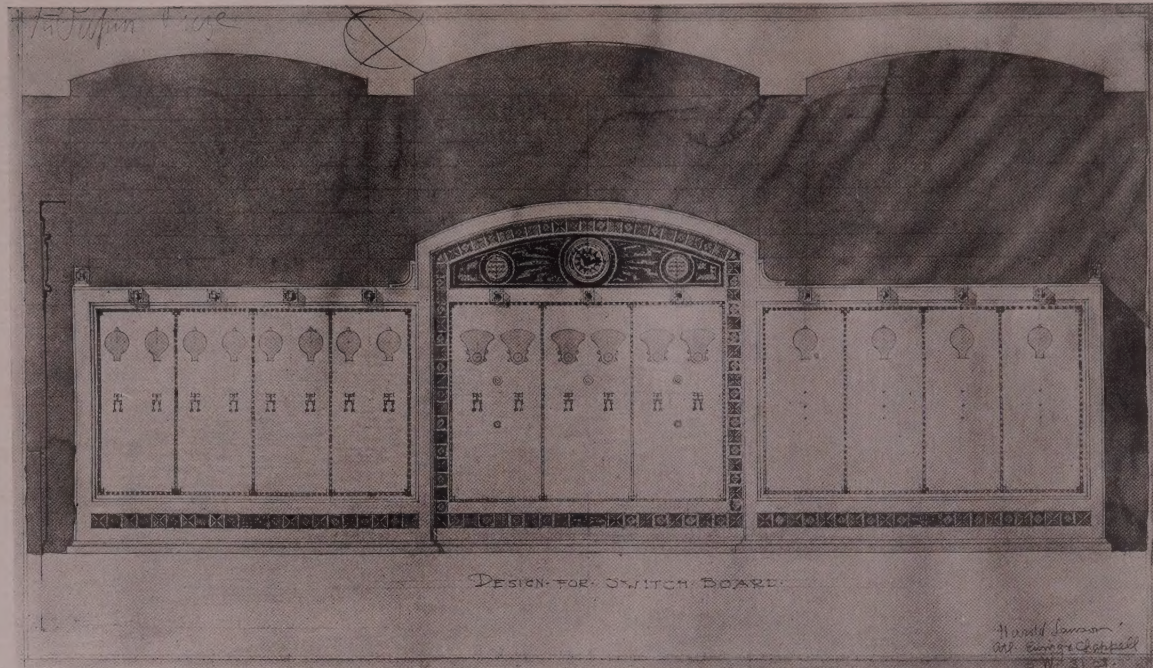
INTERIORS, RESIDENCE, H. S. HOLDEN, ROCHESTER, N. Y. (For Exterior, see plate lxxxvii; for plans, see page 189)

A. L. Brockway, Architect.



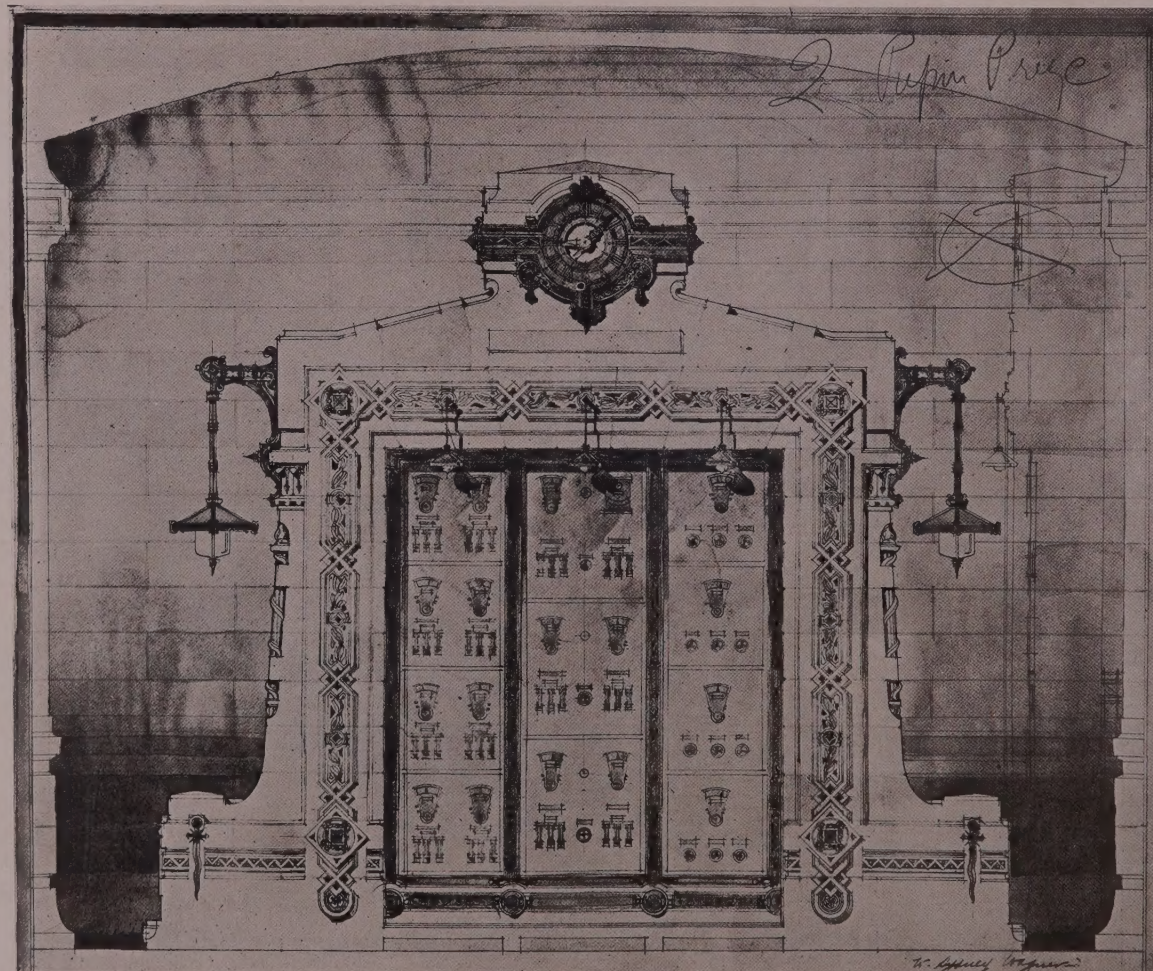






I Prize.

H. Lawson, Atelier Ewing &amp; Chappell.



II Prize.

W. S. Wagner, Atelier Hornbostel.



( Continued from page 183 )

salary, and again charges it against the owner from time to time, as it accumulates, say, for one month, or three. Under this peculiar arrangement of joint appointment, or rather of appointment by one man and payment by another, it is not always easy in the absence of special arrangement, to say to whom the Clerk of Works is most responsible, the architect or the employer, or from whom in case of need he must accept notice of dismissal. At the outset of his employment there ought to be a clear understanding upon these points; but even at best the position becomes an exceedingly difficult one under some circumstances. So long as all is above board, as it is in the vast majority of cases, no trouble arises. The architect, as the owner's agent, stands in his place and possesses full power. But it has occasionally been known for a Clerk of Works to condemn bad work, and for the architect subsequently to disallow his action—not once, but again and again, where large sums are involved, until the Clerk of Works seriously doubts the architect's action being *bona fide*—for until such a doubt arises, the architect's decision is undoubtedly final. In such a case it has—rarely, but now and again—been the Clerk of Works' duty to report the matter to the employer by whom he has been paid, and trouble has naturally followed. Without advocating the adoption of this course except as an extreme measure under very serious circumstances, enough has been said to show how delicate the position may become.

Except in such a rare case as has just been referred to, the Clerk of Works' position is legally that of the architect's representative on the works. This does not give him the right to so far trade upon his position as to actually interfere on his own responsibility, with the planning and design of the building committed to his charge. It is, in fact, his duty to see that the drawings and specifications are complied with in every possible respect, and to report to the architect whenever compliance is not possible, acting on his own initiative, however, when emergencies arise, as they sometimes do in the most unexpected way. Within these limits he has authority to order *necessary* extras, and at all times towards the builder he occupies the place of overlooker, against whose decision there is little appeal on matters of construction, workmanship, and quality of goods supplied. With the individual workmen employed he has not much to do, his dealings being much more with the foreman, to whom alone he should make his complaints and enforce his orders, though as the architect's agent he has the power, if necessary, of insisting upon the dismissal of any particular workman, either for incapacity or misbehaviour.

It will be seen that these powers and responsible duties involve the close attention of a capable man, if a building of even a moderate size is to be thoroughly overlooked. He must be on the works when the men arrive in the morning, if only to check such practices as the using of stale mortar, and he must be there almost constantly, watching every carload of material as it is brought upon the site, inspecting it and rejecting it immediately if unsuitable, and seeing in such a case that it is removed at once. He must watch the workmen throughout the day, seeing that everything is performed in a thoroughly sound manner; and he must occasionally visit the contractor's workshop so as to supervise the joinery which is there being prepared long in advance of the time when it will be required to be put into position. Where deviations occur from the original inten-

tion as expressed in drawings and specification, he must make careful notes of these, taking measurements in all instances where the work is subsequently to be hidden. He must keep regular diaries and records of everything that occurs, and must report regularly (preferably on forms supplied for the purpose) as to what is happening, calling attention in good time to any probable difficulties which he may foresee. He must, moreover, have the power of insistence, to insure that defects really are remedied, and not merely hidden up and forgotten.

It will be seen that the class of man suited for such work as this is somewhat exceptional. Above all things a Clerk of Works must have a most intimate knowledge of building operations. He must be a practical man among practical men; but beyond this he should have studied sufficiently to know a good deal more than the majority of those placed under him. Too young a man has not sufficient authority for such a post, nor would he probably have sufficient knowledge. Absolute honesty is, of course, essential; but this, one is glad to say, is not difficult to find, and the Clerk of Works who will accept bribes from the builder or the manufacturer to induce him to pass imperfect work is decidedly the exception. Possibly the best fitted for such a post is the man who has been trained at one of the principal building trades, such as that of carpenter or mason, and who has attended good technical schools and kept his eyes open on the works, so as to obtain a good working knowledge of all the other trades connected with building operations. Such a man has probably, in a builder's employment, been raised to the position of foreman, first in his own trade, and subsequently over all the work connected with a building. Knowing in this capacity everything from the builder's standpoint, he is often perfectly fitted to supervise from the architect's standpoint. He needs to be self-contained, able to speak his mind, and also able to control himself, perfectly firm, sober, and consistent; but perhaps his greatest qualification is that of method, so that he may have records of all that occurs available for production whenever they may be needed.

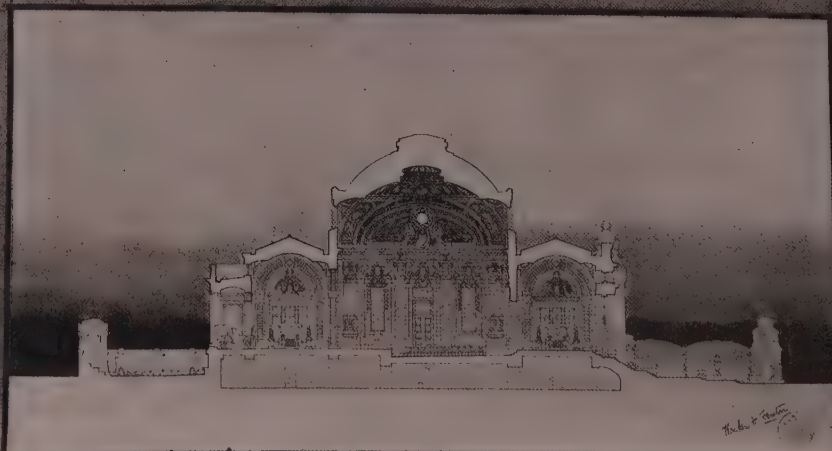
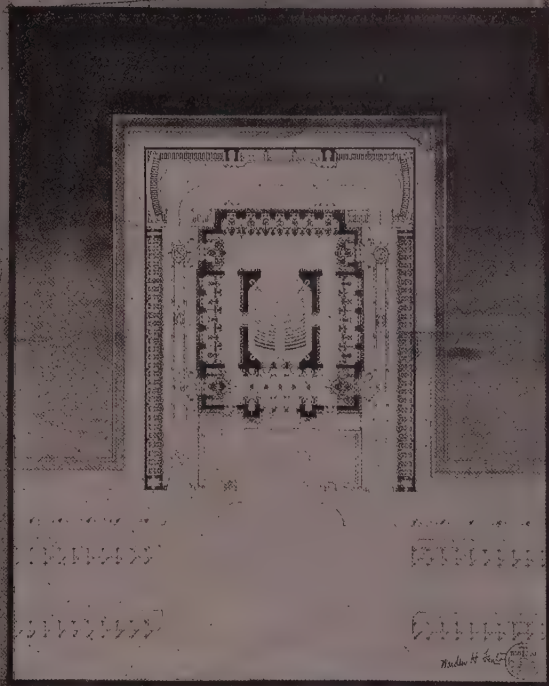
There can be few worse Clerks of Works than he who makes a pal of the foreman, and while he who is always appealing to the architect upon every little question will soon be voted a nuisance, and is not likely to be employed twice in succession by the same man, it is almost as bad for him to take too much upon his shoulders, and, when confronted by a difficulty, to order it to be got over by some method which will alter the design or increase the cost, without consulting his superior first.

In his intercourse with the building owner reticence is especially necessary, else it is possible for him to cause a good deal of trouble. He must remember that it is the architect to whom his reports are primarily to be made, and whom he must consult in case of difficulty, the employer having no power to order deviations or extras. A fidgety employer will give both the foreman and the Clerk of Works a good deal of trouble; but while he must be treated respectfully and with attention, it is always well to be careful as to what is said. It is not even advisable to let him know, in all cases, what has been necessary to condemn, for much less friction arises if bad work is dealt with directly than if a third person is introduced.





1st Medal



BEAUX ARTS COMPETITION—AN AMPITHEATRE FOR THE STUDY OF AUTOMOBILISM.

I Medal. W. H. Fenton, Atelier Cret.



## The Society of Beaux Arts Architects

INCORPORATED 1894.

WHITNEY WARREN,  
President.

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OFFICIAL ORGAN - - ARCHITECTURE.

### PUPIN PRIZE.

#### DECORATIVE AND ARCHITECTURAL TREATMENT OF A SWITCH-BOARD TO BE PLACED IN THE POWER HOUSE OF A SMALL MUNICIPAL ELECTRIC LIGHT PLANT.

This switch-board will be divided into three main parts: the central will be for two generators and one excitor; the one to the right for street service lighting and the one to the left for service feeders of house service. All panels will be about 7 to 10 ft. high and the panel-board will stand about 6 ft. out from the wall.

It is desirous to treat this large switch-board in some architectural manner, such as giving it a proper frame of bronze or stone ornament with proper inscriptions and possibly a setting of some kind. The two ends of this switch-board are to be closed with wrought iron or bronzed gates so as to prevent entering the rear of the switch-board.

The proper indication of the electrical appliances on the different panels is also to be considered; these appliances are as follows:

The central panel will be divided into three panels, each 3 ft. wide. Two of these panels, for the alternating current generators, will each have two ammeters, one field rheostat handle, one field switch, one oil switch and one pilot lamp. The excitor panel will have one ammeter, one volt meter, one rheostat handle and two pole switches. The panel to the right will be divided into four 30" panels, each containing one ammeter and several plug switches. The panel to the left will be divided into four 30" panels each containing two ammeters and two oil switches.

Drawings required: An elevation and a section of scale of 1" equals 1 ft.

#### REPORT OF JUDGMENT.

Lawson, H.	New York	Atelier Ewing & Chappell	First Prize
Wagner, W. S.	New York	Atelier Hornbostel,	Second Prize
Clark, L.	Philadelphia	Atelier Cret	
Saum, F. J.	St. Louis	Atelier Wash. Univ.	
Norris, W. I.	New York	Atelier Ewing & Chappell	
Barry, F. H.	New York	Atelier Hornbostel	
Eggers, O. R.	New York	Atelier Hornbostel	
Holland, J.	New York	Atelier Hornbostel	

### CLASS A PROJECT.

#### AN AMPHITHEATRE FOR THE STUDY OF AUTOMOBILISM.

By J. M. HOWELLS.

This building, to be used as a lecture and Exhibition Hall, is built and maintained by a group of large manufacturers for interesting and instructing the public in automobilism.

Being somewhat out of town, it is to be an isolated building standing in a small plot or park, 200'—0" front

by 250'—0" deep, and surrounded by property lines, except on the front, which is on the line of an avenue.

It shall contain an ampitheatre for 300 people, with a stage on which at least two cars can be explained at the same time. Around the ampitheatre, besides an ample vestibule and proper corridors, should be properly disposed several long rooms or galleries for the permanent exposition of cars and their parts. Stairs inside and an incline outside shall lead to ample light basement partly above ground, in which shall be a demonstrating repair shop, besides toilets, heating apparatus, etc., and a waiting room for mechanics.

One of the main features of the composition should be a number of shelters so disposed in colonnades, arcades or other architectural treatment as to contain at least 50 cars belonging to the audience, besides as much open space as possible conveniently disposed for more cars. One or more entrances and exits, roadways, a small or track space for learning to maneuver the cars, etc. should be properly shown in the composition.

The building should have a monumental and somewhat sumptuous treatment.

Drawings to be—for the Rendu:

1. A plan of the building and grounds at 1-16" scale.
2. An elevation at 1-8" scale.
3. A section on the main axis at 1-8" scale.

For the Esquisse:

Plan and section of main building at 1-32". Elevation at 1-16".

#### REPORT OF JUDGMENT.

Bauer, C. H.	Philadelphia	Atelier Cret	2nd Medal
Raignel, W. O.		Atelier Cret	H. C.
Trout, W. P.		Atelier Cret	Mention
Fenton, W. H.		Atelier Cret	1st Medal
Sharpley, W. W.		Atelier Cret	Mention
Dunlap, M. E.		Atelier Cret	Mention
Hannon, W. W.	Ithaca, N. Y.		2nd Medal
Lander, H. C.	Ithaca, N. Y.		
Ramberg, O.	New York City	Atelier Donn Barber	2nd Mention
Taylor, W. C.	Ithaca, N. Y.	Atelier Prevot	2nd Medal
Backus, R. E.		Atelier Prevot	Mention
Marsh, R. E.		Atelier Prevot	Mention
Horton, H. L.		Atelier Prevot	Mention
Troutschold, C. M.		Atelier Prevot	Mention
Rogers, H. P.		Atelier Prevot	2nd Medal

### OUR CHANGING METHODS OF CONSTRUCTION.

By C. M. MORRIS.

EVERY observant man will have recognized that the methods of building construction have been undergoing radical alterations of recent years. These changes may be said to have commenced so long ago as the time when the blast-furnace was first used for obtaining pig-iron from the ore, as ever since that date there has been a steadily increasing tendency to the use of metal. That a really important movement was thus inaugurated was hardly recognized at first; the methods of construction in brick, stone, and timber which had obtained for many centuries and become part of the tradition of the building craft, not being seriously altered until comparatively recent times, while even now the older systems are still in vogue in all small buildings. The first



use of metal was for weight-carrying only, cast-iron girders and cantilevers to a small extent taking the place of those of timber, until they were themselves replaced by rolled iron girders. About twenty years ago these again began to be superseded by steel, and at the present time cast and wrought iron are but rarely found in the structural parts of buildings.

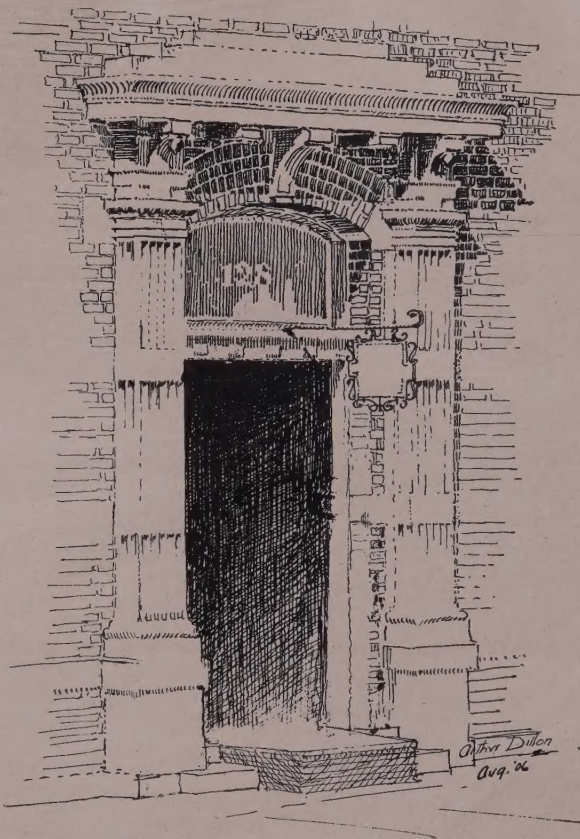
Simultaneously with this large introduction of metal has come the development of concrete, the modern conglomerate of this nature, sound and strong, originating with the production of a reliable artificial cement. Thus to-day we have two materials of first-class importance—steel and Portland cement concrete—of which our forefathers were entirely ignorant, and inasmuch as in many respects they have advantages over the old materials, they are supplanting them. As a natural consequence, methods of construction are being adopted which are suitable to the new and unsuited to the old conditions. Thus steel framework buildings are being erected in most of our larger towns, the whole structure being first framed together in steel, in the semblance of a huge birdcage, and the stone or brickwork being merely employed as a casing to keep out the rain. Competing with this is the new armored concrete, in which the tensional strength of steel is utilized to stiffen the concrete, which itself is enormously strong to resist compression, a great impetus to the use of which has been the desire for erecting buildings which shall be comparatively fire-resisting, it having been found, after many years experiment, that steelwork properly embedded in a properly made concrete is highly resistant to fire.

The chief incentive, however, to the introduction of these new methods of construction is undoubtedly economic. There are other ways by which buildings may be rendered fire-resisting, as was discovered so long ago as when the great Byzantine churches were erected; but they are costly. There are other methods than the employment of steel, by which it is possible to put up roofs of large span; but these, too, are expensive. It is the comparative costlessness, therefore, of the new materials which makes them desirable, combined with increased rapidity of building, and with facilities for covering large open spaces with ease, and for building to a great height hitherto undreamed of in ordinary work; and these are, in fact, but various phases of the economic problem. The merchant knows well that it is economical to build rapidly, for he thus the sooner obtains occupation of his premises and the use of his building. It is economical to

cover large spaces in single spans, as the handling of goods is easy and cheap in an open space. It is economical to build high, as more accommodation is thus provided upon the same amount of costly land; and it is certainly economical to avoid destruction by fire, for even if there be no reduction in the insurance premium, much loss of time and dislocation of business is thereby avoided. All these put together, however, would not account for the rapid increase in the growth of steel and concrete building, if it were not for competition with the older system in actual first cost. Now steel is in itself an expensive material if judged by its bulk. It is only cheap in comparison with the work which it accomplishes. First-rate concrete, on the other hand, has at present a distinct advantage in cost over other first-class walling or flooring materials.

This is due very largely to the action of the trade unions in the larger towns. Concrete can be laid by unskilled labor and non-union men paid at a comparatively low rate of wages. Brick and stonework demand skilled labor which is organized in the unions. These unions demand a certain minimum rate of pay for all engaged in the crafts they represent, and in the case of the bricklayers in particular have gone so far as to restrict the output. As a natural consequence of this cost of masonry, and particularly of brickwork, is factitious. If a man who can easily lay 1,000 bricks per diem is not permitted to lay more than 400, it follows that he is being overpaid, not for the time he spends upon his work, but for the amount of work which he does. If he were to lay 1,000 bricks and be paid at the same rate as at present, he could still live as well as he now does but the cost of the finished brickwork would be less. Thus by artificially forcing up the price of

brickwork, he has rendered it necessary for those who build to discover a material which shall supplant bricks, and this material is found in concrete. We are not saying a word against the unions in their desire to procure for each man a fair remuneration for a fair day's work; but when they make a mistake of requiring a good workman to do but a half day's work for a whole day's pay, they are not benefiting, but harming the man, as his employer is then led to seek some means of obtaining fair value for his outlay in labor, and this can only be done by employing a different laborer. If concrete building becomes as general in small work as it is soon likely to be in large, there will be need for fewer bricks and bricklayers, and the man who could obtain good pay as a skilled workman in that



SHIPPING ENTRANCE, FOX BROS. CO.'S WAREHOUSE, NEW YORK.

Arthur Dillon, Architect.



trade, will, in order to live, have to accept the unskilled laborer's rate for laying concrete.

Much the same thing has occurred with regard to the plasterers. Some few years ago they forced up the price of their labor to an undue extent, and immediately the market was flooded with artificial plasters and plaster slabs which could be put in place by any workman who knew how to use a screw-driver. In the matter of timber, the cause for its being supplanted by concrete and steel, particularly in flooring, is different. This, as already said, is partly due to the desire for erecting fire-resisting buildings; but beyond this there has been a steady increase in the cost, and deterioration in the quality, of the fir timber imported into the country, owing to the gradual destruction of the timber forests, first of Northern Europe, and then of America, until now there is little to choose in point of expense between putting up a wooden floor and one of steel and concrete.

The great root changes in building construction necessitated by these new materials have been followed very closely by many minor changes, compositions of various kinds being introduced for many purposes. Not long since, all partitions had to be either of brickwork or of timber studding; now there are many patent partitions in the market, each vying with the other in thinness, stability, sound resistance, and economy of first cost. Roof coverings, floor coverings, wall coverings, and many types of finishings, mantelpieces and fireplaces for example, are rapidly undergoing change. Electric lighting is taking the place of gas, just as gas took the place of oil and candles, telephones are being used instead of speaking-tubes; and so almost every detail of a building is changed in its constructional character.

What effects will be produced upon the architecture none yet can tell, but these must develop slowly; but that a

change will come is perfectly certain to any who study how such changes have been accomplished in the past. In places where there has been timber only, there has arisen a framework architecture, as in Norway and Japan; where there has been only massive stone, the lintel form of construction has been adopted, and on it has been based all Classic work. With the use of smaller stones there developed the arch, and from the arch sprang a new form of architecture, developing into the glorious Gothic structures of Mediæval times. It was a desire for fire-resistance in those days which led to the erection of domes, on which the Byzantine style was based, and of vaults which did so much to influence the development of the Gothic.

Thus every style of architecture has been logically derived from the method of construction adopted at some particular place and period, and the construction in its turn has been based upon the material employed. Concrete alone has been used before, though Roman concrete cannot compare with the Portland cement concrete of the present day; but steel work, either alone or in combination with concrete, is something new, and just as it is apparently controlling the construction of all our greater buildings, so presently must it control their architecture. Probably among smaller buildings the change will be less rapid. It will still be economically cheapest to build on the old lines for many years to come, particularly in brick-burning districts.

Just as the discovery of the arch did not necessarily, nor at any time entirely do away with the use of the lintel, nor the employment of brick and stone for walling overcome the need for the use of timber in certain portions of a building, so it is not to be expected that steel and concrete will entirely do away with either brick or stone or wood; nor will the new architecture at once supplant the old, nor even quite do so where the old materials are employed.

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## THE SCHOOLS OF ORNAMENT.\*

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## Henry IV.

Born at Pau 1553, Died at Paris 1610.



BOURBON "Henry of Navarre" reigned from 1589 to 1610, and in spite of the bloody days which came to France before and after his accession, it is not possible to see any reflection thereof in the arts of the day.

There is, however, a certain grimness and hardness in the clean cut lines of the modeling of the interlace and in the carving of the leaf forms which sometimes have the character of work hastily or rudely done to save time or to obtain an effect of primitiveness.

The garland and encarpus of the Greek and Roman period is still to be distinguished in the vignettes, tailpieces and carvings of this date, and the human form fills many a niche and opening, while on bracket and cartouche and pediment, the grotesque greets one in the form of grinning masque and conventionalized satyr.

A free use of leaf ornament is to be seen in the columns on the stair balustrade in the church of St. Etienne-du-mont, Paris, where the general interior of the church also shows an interesting employment of the ornament of this period.

In speaking of the hardness and primitiveness evident in certain examples of this school it is not to be taken as an entirely derogative criticism. Many schools have qualities of this kind which, when the ornament is shown in certain places, are rather valuable than otherwise.

Some of the best decorative carving, as we all know, is rough work, and in the Elizabethan and Flemish schools the coarseness of scale in different parts is strikingly good and engages our interest before we recognize the cause. Herein much of our modern design is at fault; we see, or try to see, intricate lace-like foliage put on a facade one or two hundred



Carved Panel.



Carved Pediment.

Konstanz, Rathaus, Hofansich.  
Courtyard of the Rathaus at Constance.

feet above the street, and we cannot bring ourselves to any thought of it except that it is there and was, perhaps, put there because it was in terra-cotta and cheaply duplicated, or perhaps in stone because the client knew no better way to let his architect spend money.



Vignette.

Even in interiors where ornament is much nearer the eye, it is often miscalculated in its relation to the space it fills and its distance from the eye. That this is often the case is proved by the fact that few educated people are displeased with the coarseness of scale in Elizabethan ornament, which is characteristically bold and at times coarse. The beautiful staircase of the Cluny Museum is of the style of Henry IV.

That delicate and refined designs were also designed in this period is shown by the vignettes here given.



Panel Ornament.

\* A series of articles written by Mr. William Winthrop Kent, Architect, forming part of "A Treatise on Locks and Builders' Hardware," by Henry R. Towne, President of the Yale & Towne Mfg. Co., and Past President of the American Society of Mechanical Engineers. This book is profusely illustrated and contains more than 1100 pages, 4x6½" John Wiley & Sons, Publishers. Price, \$3.00. It is the intention of the publishers of ARCHITECTURE to reprint one school in each number.